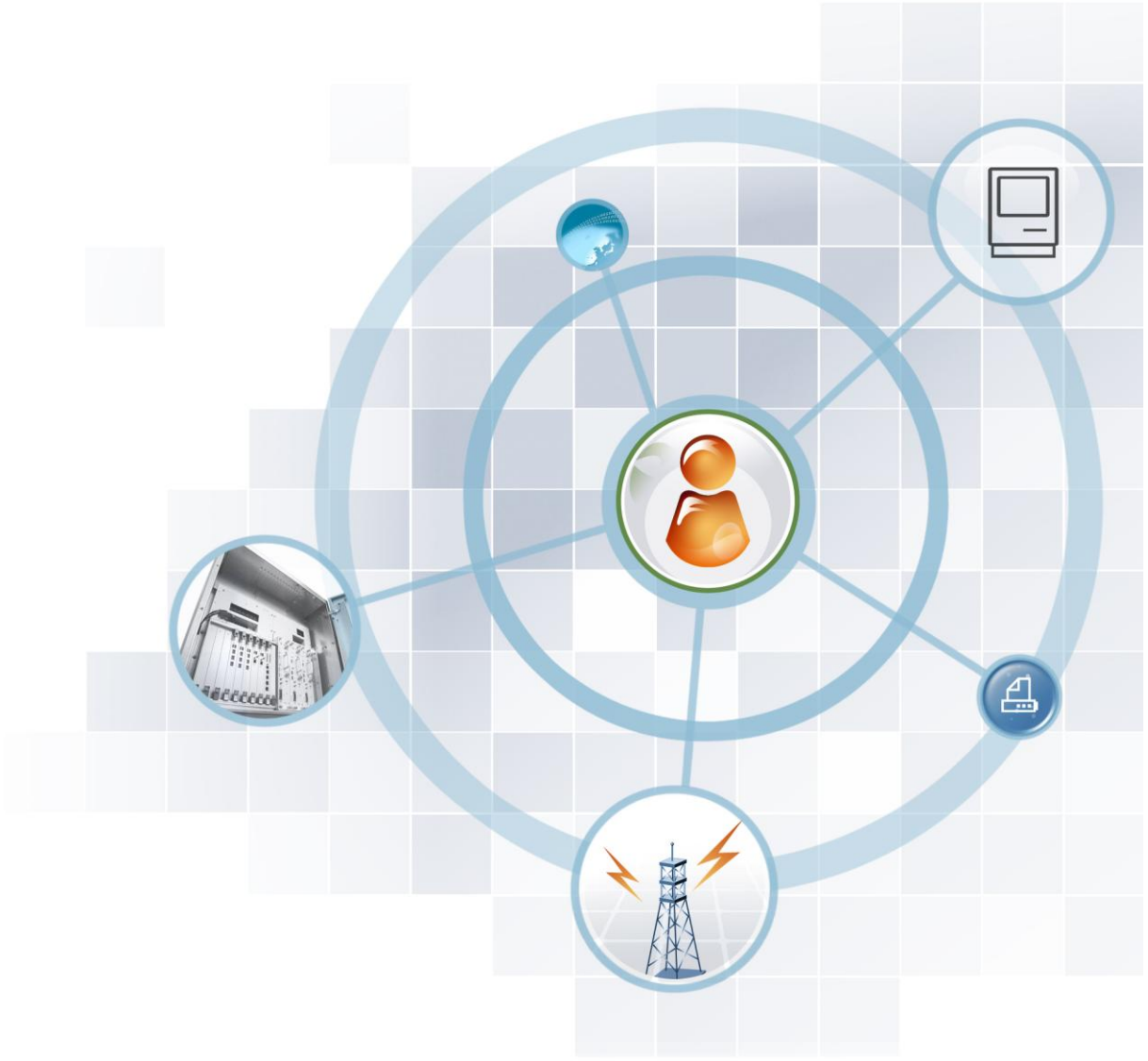
2600-00FK28GAB Ver. 3.0

WEC8500/WEC8050 (APC)

Maintenance Manual



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INTRODUCTION

Purpose

This manual describes how to identify the cause of failures which occur in the Access Point Controller (APC) system and troubleshoot them.
This manual is written based on WEC8500 version 1.4.4 and WEC8050 version 1.0.0.

Audience

This manual is intended for operator of Samsung WEC8500.

Document Content and Organization

This manual consists of 5 Chapters, 1 Annex, and a list of Abbreviations.

CHAPTER 1. System Management

This chapter describes the symptoms of the APC system and their solutions.

CHAPTER 2. WLAN Management

This chapter describes the possible problems and their solutions for Wireless Local Area Network (WLAN) services.

CHAPTER 3. Connection Management with AP

This chapter describes the possible problems and their solutions when connecting to the Access Point (AP).

CHAPTER 4. Security Management

This chapter describes the possible problems and their solutions while using various security features.

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CHAPTER 5. Wi-Fi Management

This chapter describes the problems which could occur concerning settings for the wireless interface using Wi-Fi.

ANNEX A. Problem Analysis Log List

This describes a summary of meanings, locations, and methods of extraction for the logs helpful for problem analysis of the system.

ABBREVIATION

Describes the acronyms used in this manual.

Conventions

The following types of paragraphs contain special information that must be carefully read and thoroughly understood. Such information may or may not be enclosed in a rectangular box, separating it from the main text, but is always preceded by an icon and/or a bold title.

NOTE

NOTE

Indicates additional information as a reference.

Console Screen Output

- The lined box with '`Courier New`' font will be used to distinguish between the main content and console output screen text.
- '**`Bold Courier New`**' font will indicate the value entered by the operator on the console screen.

Revision History

VERSION	DATE OF ISSUE	REMARKS
3.0	10. 2013.	- The related contents of WEC8050 AP Added (integrated WEC8500 and WEC8050) - Revised with S/W package upgrade (WEC8500 version 1.4.4, WEC8050 version 1.0.0)
2.0	06. 2013.	- Added 1.3.2 - Changed 2.1.1, 5.3 Printout Message 1.3.1, 2.3.1, 3.3, 5.2 Contents
1.0	03. 2013.	First Version

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CHAPTER 1. System Management

This chapter describes the symptoms of the APC system and their solutions.

1.1 System Booting

This section describes the symptoms occurring during the system booting, their causes and solutions.

1.1.1 Booting failure due to system overheating

While the APC system is booting, if the boot loader detects system overheat, booting is stopped and power is automatically turned off to protect the hardware from any possible damages.

Symptoms

During the booting, the ‘CPU overheat detected’ log indicating overheating of the central processing unit (CPU) is displayed in the boot loader, and then the power is automatically turned off.

- WEC8500: The power is still supplied to the power module and the fan of the power module remains operational.
- WEC8050: For there is no separate power module, the fan does not operate after power-off.

```
SATA link up 3.0 Gbps (SStatus 123 SControl 320)
scanning bus for devices...
  Device 0: (0:0)  Vendor     : ATA Prod.: SanDisk SSD P4 1 Rev: SSD
                   Type       : Hard Disk
                   Capacity   : 15272.0 MB = 14.9 GB (31277232 x 512)
USB                           :   USB EHCI 1.00
scanning bus for devices... 2 USB Device(s) found
Type the command 'usb start' to scan for USB storage devices.

boot partition: 2
CPU overheat detected (cpu:91, thr: 85)
```

```
##########################################################################
System will be shutdown to prevent critical hardware damage
##########################################################################
```

Possible Causes

This occurs if the CPU temperature exceeds the booting threshold (85℃) for the following reasons:

- Malfunctioning of the fan
- Operational error of the temperature sensor
- Problem with the ambient temperature of the installation environment

Solutions

1) Switch off the power module on the rear of the APC.
2) Cool the APC sufficiently in room temperature or low temperature environment and then try booting again.
3) If the symptom persists, contact the Samsung Technical Support Team for the countermeasure.

1.1.2 Booting failure due to physically damaged disk

This occurs if kernel loading fails due to physical damage of the Solid State Disk (SSD) while the APC is booting.

Symptoms

The ‘system kernel loading fail (status: 0)’ log is displayed during booting and the system restarts 3 times. Then, the system goes to the shell environment of the boot loader.

```
##### BOOTING START #####
Looking for valid bootloader image....

(Omitted)

SATA link down (SStatus 0 SControl 320)
scanning bus for devices...
No Link on port 0!
scsi_ahci: SCSI inquiry command failure.
system kernel loading fail (status: 0)

(Omitted - Retry the same process for three times when the board is
reset)

SATA link down (SStatus 0 SControl 320)
scanning bus for devices...
No Link on port 0!
scsi_ahci: SCSI inquiry command failure.
system kernel loading fail (status: 0)
USB:   USB EHCI 1.00
scanning bus for devices... 1 USB Device(s) found
Type the command 'usb start' to scan for USB storage devices.

boot partition: 1

################################################################################
#########
Bootloader failed to load kernel and reset the system to recover from
fault.
Check your system non-volatile storage device and package images.
################################################################################
#########

Octeon wec8500#
```

Possible Causes

Physical input/output (I/O) of the disk is not possible during the booting process for the following reasons:

- No disk device is installed
- The disk device is not detected because the disk device connector is not correctly connected.
- The disk device has sustained an irrecoverable physical damage.

Solutions

Contact the Samsung Technical Support Team for the countermeasure.

1.1.3 Booting failure due to file system error

This occurs if an error occurs in the booting partition installed on the disk or in the file system while the APC is booting which leads to the kernel loading failure.

Symptoms

The ‘system kernel loading fail (status: 1)’ log is displayed during booting process and the system restarts 3 times. Then, the system goes to the shell environment of the boot loader.

```
##### BOOTING START #####
Looking for valid bootloader image....

(Omitted)

boot partition: 1

Enter password to stop autoboot.

** Bad partition 1 **
system kernel loading fail (status: 1)

(Omitted - Retry the same process for three times when the board is
reset)
boot partition: 1

Enter password to stop autoboot.

** Bad partition 1 **
system kernel loading fail (status: 1)
Fail from partion 1 now we boot from partition:2
Setting boot partition to: 2
Writing tuple type 61441 to addr: 0x40
** Bad partition 2 **
Error: Bad gzipped data
argv[2]: coremask=0xff
argv[3]: endbootargs
## No elf image at address 0x20700000
system kernel loading fail (status: 2)
bootoctlinux: fail to boot up linux kernel (rcode: 1)

#########################################################################
#########
Bootloader failed to load kernel and reset the system to recover from
fault.
Check your system non-volatile storage device and package images.
#########################################################################
#########

Octeon wec8500#
```

Possible Causes

During the booting process, kernel image loading is not possible for the following reasons:

- Neither the primary (active) partition nor the stand-by partition is detected due to damaged partition table.
- The partition table is normal, but both the primary partition and the stand-by partition are formatted.
- The file system is normal but the kernel is not found within the file system on the primary partition and the stand-by partition

Solutions

Contact the Samsung Technical Support Team for the countermeasure.

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1.1.4 Booting failure due to damaged kernel image

This occurs if the kernel image on the primary partition of the disk is damaged and cannot be loaded while the APC is booting.

Symptoms

The ‘system kernel loading fail (status: 2)’ log is displayed during booting and the system restarts 3 times. Then, the system goes to the shell environment of the boot loader.

```
##### BOOTING START #####
Looking for valid bootloader image....

(Omitted)

boot partition: 1

Enter password to stop autoboot.

Loading file "/boot/vmlinux.gz" from scsi device 0:1 (sda1)
0 bytes read
Error: Bad gzipped data
argv[2]: coremask=0xff
argv[3]: endbootargs
## No elf image at address 0x20700000
system kernel loading fail (status: 2)

(Omitted - Retry the same process for three times when the board is
reset)

boot partition: 1

Enter password to stop autoboot.

Loading file "/boot/vmlinux.gz" from scsi device 0:1 (sda1)
0 bytes read
Error: Bad gzipped data
argv[2]: coremask=0xff
argv[3]: endbootargs
## No elf image at address 0x20700000
system kernel loading fail (status: 2)
bootoctlinux: fail to boot up linux kernel (rcode: 1)

#################################################################
#########
Bootloader failed to load kernel and reset the system to recover from
fault.
Check your system non-volatile storage device and package images.
#################################################################
#########

Octeon wec8500#
```

Possible Causes

During the booting process, kernel image loading is not possible for the following reasons:

- The kernel image exists on the primary partition but the file is damaged and corrupted from the original.
- The kernel image is overwritten with another file.

Solutions

1) In the boot loader log, use the 'boot partition' message to check the primary partition information. ('1' or '2')

```
boot partition: 1

(Omitted)
########################################################################
#########
Bootloader failed to load kernel and reset the system to recover from
fault.
Check your system non-volatile storage device and package images.
########################################################################
#########
```

2) Rollback to the previous package residing on the stand-by partition.
To rollback, if the primary partition is '1', set the boot partition to '2'. Or, if the primary partition is '2', set the boot partition to '1'.

```
Octeon wec8500# tlv_eeprom set boot 2
Setting boot partition to: 2
Writing tuple type 61441 to addr: 0x40
```

3) Restart the system.

```
Octeon wec8500# reset
```

4) When booting is completed, execute the 'package upgrade' command with the official package of a desired version to upgrade. When upgrading is completed, the system restarts to apply the package.
An example of executing the upgrade command is as follows.

```
WEC8500# configure terminal
WEC8500/configure# package upgrade disk:/package/wec8500_0.8.1.R.bin
Notice: The system will reboot after upgrading with the file.

       Do you want to save the configuration? (y/n): y
```

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```
       Do you want to upgrade the system? (y/n): y
Package Validation check ... success
Package Upgrade ..................... done
Success
```

5) When booting is completed normally, check that the new package has been applied to the system.

```
WEC8500# show reboot cause
 Reboot Cause: Block: Upgrade/ Code: Package Upgrade

WEC8500# show version
Samsung package version information
Primary (currently running)
  ver          : 0.8.1.R
  buildTime    : Mon Aug 20 11:35:43 2012
  builder      : apcbuilder
  buildDir     : /home2/apcbuild/wec8500/apc
Backup
  ver          : 0.7.1.R
  buildTime    : Mon Aug 03 09:27:19 2012
  builder      : apcbuilder
buildDir       : /home2/apcbuild/wec8500/apc

Boot rom version information
  ver          : FI10_17:15:14
```

1.2 System Messages (Alarms/Events)

This section describes symptoms, causes and solutions of problems occurring to the system messages (alarms, events, logs, etc.).

1.2.1 Alarm or event is not generated

Symptoms

Alarm output command does not reveal any information on alarms or events.

```
WEC8500# show alarm history all
 Error : can not read the file

WEC8500# show event
 Error : can not read the file
```

or

```
WEC8500# show alarm history all

WEC8500# show event
```

Possible Causes

- The alarm format has changed due to the package upgrade.
- The alarm format is unknown.

Solutions

1) Before changing the alarm format, delete all previously generated alarm logs.

Deleting alarms of the format prior to change:

```
WEC8500# clear log alarm
```

Deleting current alarms of the format prior to change:

```
WEC8500#clear log actalarm
```

2) Apply the new alarm format.

```
WEC8500#clear log alarminfo
```

3) Check the alarm and event logs again.

```
WEC8500# show alarm history all

WEC8500# show event
```

1.2.2 System log message is not displayed

Log messages may not be generated due to log message format errors or incorrect filter settings.

Symptoms

Log output command does not generate any log messages.

```
WEC8500# show debug log all
Error : can not read the file
```

Or only some messages are generated as shown below.

```
WEC8500# show debug log all
1 evm [2012-08-18 12:48:33.548] WRN Clear Debug Detail Log file
2 evm [2012-08-18 12:47:29.884] WRN Clear Debug Log file
3 eqm [2012-08-31 17:42:05.546] MAJ CPU Load Alarm Cleared - CPUID(4)
LOAD(0.000000) Threshold(90)
…
```

Possible Causes

The ‘Error: cannot read the file’ error is generated because of format error of log messages.

- The log message format has changed after upgrading the package.
- The log message format is unknown.

Only some log messages are generated because of filter settings of levels or module names of log messages.

Solutions

If log messages are not generated due to format problems, take the following steps.

1) Delete all logs and allow a new log format to be applied.

```
WEC8500# clear log debug
```

2) Check the log messages again.

```
WEC8500# show debug log all
```

In case of incorrect filter settings, take the following steps.

1) Check the log filter settings.

```
WEC8500# show debug log conf
-------------------------------------------
       Debug Log Configuration
-------------------------------------------
 Debug Log Mode                 On
 Debug Log Module Filter        all
 Debug Log Level Filter         warning
 Debug Log File Size            10 MBytes
 Debug Log File Count           1
 Module STD Out                 Off
 Module Filter STD Out          all
 Module Level Filter STD Out    debug
```

2) Execute the ‘debug log level’ and ‘debug log module’ commands to reset the log filter.

```
WEC8500# debug log level <critical|major|minor|warning>
```

```
WEC8500# debug log module <evm|swm|cm|list|NAME>
```

3) Check the log messages again.

```
WEC8500# show debug log all
```

1.2.3 Incorrect alarms are generated

After upgrading the package, the alarm table may be changed as shown below. In this case, when an alarm is generated, another alarm message may be displayed.

Previous alarm table:

```
WEC8500# show alarm info
1 system      CRT Loss Of Signal
…
82 network    CRT NET Duplicated IP
83 network    CRT NET Rx Multicaet Queue Full
84 network    MAJ NET Heartbeat Loss Trap
85 network    MIN NET VLAN Request Failure
86 network    MAJ NET VLAN Default CFG Failure
87 network    MAJ NET VLAN Restore Failure Trap
88 network    CRT NET Link failure
```

Alarm table which is changed after upgrading the package:

```
WEC8500# show alarm list all
1 network    2012-08-31 11:09:24 MAJ APC Index[1] Name[ge1] 1301 NET
Link dn AdminStatus[up] OperStatus[down]
```

Symptoms

An alarm is generated, but message for another alarm is generated instead of the correct alarm.

Possible Causes

- Content of the alarm table has changed after upgrading the package.
- Items have been added to or deleted from the alarm table after upgrading the package.

Solutions

1) Delete the existing alarm information in order to build the alarm table in a new format.

```
WEC8500# clear log alarminfo
```

2) When an alarm is generated, check the alarm information again.

```
WEC8500# show alarm info
```

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1.2.4 Syslog messages are not sent to the syslog server

Symptoms

The alarm and log messages generating in the APC system are not sent to the syslog server.

Possible Causes

- The syslog server is not configured.
- Internet Protocol (IP) address and port of the syslog server are not configured.
- Alarm and log messages are not sent due to the filter settings.

Solutions

1) Check the alarm message settings. Check the alarm filter information (‘Alarm Group Filter’ and ‘Alarm Level filter’), and if the filter information is not setup, use the ‘alarm group system’ and ‘alarm level major’ commands to configure the following settings.

```
WEC8500# show alarm conf
-----------------------------------------
       Alarm Log Configuration
-----------------------------------------
 Alarm Group Filter             all
 Alarm Level Filter             minor
 Alarm Log File Size            10 MBytes
 Alarm Log File Count           1
 Alarm Log STD Out              Off
```

2) Check the system log message settings. Check that ‘Debug Log Mode’ is ‘On’ and check the filter information (‘Debug Log Module level filter’). If the filter information is not configured, configure the following settings.

```
WEC8500# show debug log conf
-----------------------------------------------
       Debug Log Configuration
-----------------------------------------------
 Debug Log Mode                 On
 Debug Log Module Filter        all
 Debug Log Level Filter         warning
 Debug Log File Size            10 MBytes
 Debug Log File Count           1
 Module STD Out                 Off
 Module Filter STD Out          all
 Module Level Filter STD Out    debug
```

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3) Check the syslog settings. Execute the ‘show syslog conf’ command to check that ‘Syslog Mode’ is sent to ‘Enable’, and check the Syslog filter information (‘Syslog Level filter’).
If the filter information is not setup, execute the ‘syslog level’ command to configure the following settings.

```
WEC8500# show syslog conf
-----------------------------------------------
       Syslog Server Configuration
-----------------------------------------------
Syslog Mode            : Enable
Syslog Level Filter    : notice
Host #1 IP Address     : 192.168.0.36
       UDP Port        : 514
Host #2 IP Address     : 192.168.0.99
       UDP Port        : 510
```

4) Check that the IP address and port of the syslog server are correct. If the information is not correctly entered, execute the ‘syslog add’ command to setup the syslog server information.

```
WEC8500/configure# syslog add 192.168.0.99 udpport 510
```

1.3 Upgrade Failures

If the APC system fails upgrading, solve the problem in the following way.

1.3.1 Upgrade was canceled due to its failure.

Symptoms

When attempting to upgrade the APC system, the following error message is generated and upgrade fails.

```
WEC8500# configure terminal
WEC8500/configure# package upgrade wec8500_1.0.0.R.bin
Notice: The system will reboot after upgrading with the file.

       Do you want to save the configuration?  (y/n):  y

       Do you want to upgrade the system?      (y/n):  y
Package Validation check ... success
Package Upgrade ..................... failed (checksum error)
```

Possible Causes and Solutions

When upgrade fails, causes of the failure can be checked using the error messages. Possible causes and the troubleshooting methods are described below.

Possible Cause	Error Message	Solutions
File does not exist	Error: no exist ‘wec8500_1.3.11.R.bin’ file	Download the package to upgrade again.
Checksum error on the file	Error: Package validation check	
Upgrade terminated due to an internal error	Error: Internal error	Execute the ‘show tech-support’ and obtain the results. Contact the Samsung Technical Support Team for support.
Upgrade terminated due to timeout	saving the configuration-failed (time-out)	Execute the ‘show tech-support’ and obtain the results. Contact the Samsung Technical Support Team for support.

1.3.2 Upgrade completed successfully but the system was not booted successfully due to an error in the upgraded package.

Symptoms

Once upgrade completed successfully, the following logs are displayed during the system booting and then the system restarts. When going to the TSM after system restarts, the 'TS mode cause: Mount check' log is displayed in the login prompt of the TSM.

[TS mode screen after system restarts]

```
NOTICE: Now, The normal service is unavaliable due to some problems
during booting process.
       So, You need to contact Technical Support to troubleshoot and
fix this issues.
TS mode cause: Software Unrecoverable (70)
TS mode login:
```

Possible Causes and Solutions

If there is a problem with the process in the upgraded package, system can go to the Technical Support Mode (TSM) after the system is rebooted. The cases to go to the TSM are described as follows.

1) An error is found in the main process during the system booting.
2) The process where the problem has occurred restarts.
3) If an error occurs again in the process, the system reboots.
4) If the steps 1) to 3) repeat again during the system reboot, you will go to the TSM.

In TSM, the APC application does not launching configuration, you must restore the package to the status before the upgrade.

1) Connect the console cable to the console port of the system and access to the equipment though the console

2) Input the password below to enter the uboot mode.

```
password samsung
```

3) Execute the 'eepromtlv display' command and check the boot partition.

```
wec8500#tlv_eeprom display
```

4) If the partition checked is 1, execute the following command.

```
wec8500#tlv_eeprom set boot 2
```

1.4 Problem in Process Operation

If a problem occurs in the process operation of the APC system, the system may not function correctly. Since every process keeps a log record of all problems, use the respective log information to identify the problem.

Symptoms

The system does not function correctly or some of the commands do not work.

Possible Causes

The problem occurs in process operation for the following reasons.

- Core dump signal
- Control signal (displays back-trace log)
- Thread failure due to dead-lock or endless-loop

Solutions

1) Execute the ‘show process’ command to check the process ‘Status’.

```
WEC8500# show processes
Processes Info.
Status:        D - usually IO, R - Running, S - Sleep
               T - Stop, X - Dead, Z - Zombie
               up - Active, down - Inactive
               dis - Disable

id    name     pid     activationTime          status  reStart
--    ------   ----    -------------------     ------  ------
 0    swmmon   6222    2012-08-31 14:38:21     up(S)   0
 1    evm      1759    2012-08-31 13:47:08     up(S)   0
 2    evmlogd  1760    2012-08-31 13:47:08     up(S)   0
 3    db       1807    2012-08-31 13:47:14     down(-) 2
 4    license  1838    2012-08-31 13:47:34     up(S)   0
…
```

2) If the process status is not normal, execute the ‘show processes log’ command to check whether the log information exists. If the process log information exists, execute the ‘show processes log id’ command to check the problem and take necessary actions.

```
WEC8500# show processes log id 3
       id date                 name     pid     signal          backtrace
       reason
 ----- --------------------  ------- -----    --------------- -------
---------------
       3. 2012-08-16 22:05:31  pm      1357    SIGTERM(15)     traced
       signal
```

```
 detail (additional info.)
 → si_signo: 15(Terminated), si_errno: 0, si_code: 0, si_pid: 1473,
    si_uid: 0, si_status: 85, si_utime: 28, si_stime: 366752186384
 → si_int: 85, si_ptr: 0x556421a7f0, si_overrun: 0, si_timerid: 1473,
    si_addr: 0x5c100000000, si_band: 6326486827008, si_fd: 85
 → /usr/local/lib/libplog.so(plog_log+0x334) [0x55645b4084]
 → /usr/local/lib/libplog.so(plog_signalhandler+0x350) [0x55645b4488]
 → [0xffffff010]
 → /lib64/libpthread.so.0(sem_timedwait+0x186) [0x55645e2ec6]
 → /usr/local/lib/libths.so(thsSemWait+0x94) [0x5564240ad4]
 → /usr/local/lib/libths.so(thsSuspendTask+0xdc) [0x55642411dc]
 → pm(main+0x1ec) [0x120007064]
…
```

1.5 Device-related Alarms

1.5.1 System Temperature Alarm

The ‘System Temperature Alarm’ is generated when the system temperature exceeds the threshold. The alarm is cleared when the temperature drops below the threshold.
If the system temperature reaches the shutdown temperature, the system is powered off for system protection.

Symptoms

The following alarms are generated.

```
*2012-08-28 12:54:46 #system-CRT: System Temperature Alarm APC Declare
Temperature(94) Threshold(93)
```

Possible Causes

- The system’s ambient temperature has increased or the system temperature has increased due to an external environment problem.
- The temperature sensor or the fan of the system is faulty.

Solutions

If ‘System Temperature Alarm’ occurs, check the system temperature and the fan status.

1) Check the system temperature.

```
WEC8500# show system temp
 Sensor Location   Temperature
 ---------------   -----------
 CPU sensor 1          34
 CPU sensor 2          41
 Board                 32
```

2) Check the fan status of the system.

```
WEC8500# show system info
 ------------------------------------------------------
 Item                          System Info
 ------------------------------------------------------
 System Info :
  model type                   WEC8500
  system description           Samsung AP Controller
  board version                0.1
  cpld version                 0.5
  system mac address           00:7e:37:00:1e:70
  system total memory          16046580 KBytes
  system total disk            13520032 KBytes
```

```
Temperature Sensor Status :
 cpu upside sensor          OK
 cpu downside sensor        OK
 board sensor               OK

Fan Status :
 fan[0]                     OK
 fan[1]                     OK
 fan[2]                     OK
 fan[3]                     OK

Power Supply Status :
 Power Supply[0]            Equipped
  Status                    OK
 Power Supply[1]            Not Equipped
  Status                    -
```

3) If there is no problem with the ambient temperature of the installation site, contact the Samsung Technical Support Team for checking the system.

1.5.2 Temperature Sensor Fail Alarm

'Temp Sensor Fail Alarm' occurs if the temperature sensor of the system is faulty.
If the temperature sensor remains in faulty state for 24 hours or longer, or if the temperature sensor and the fan are faulty at the same time, the system is powered off for system protection.

Symptoms

The following alarms are generated.

```
*2012-08-28 12:54:46 #system-CRT: Temperature Sensor Fail APC Declare
Temperature sensor is not working. Please contact Samsung Technical
Support.
```

Possible Causes

- The temperature sensor is faulty.
- The system temperature cannot be checked due to faulty inter-integrated circuit (I2C).

Solutions

Contact the Samsung Technical Support Team for the countermeasure.

1.5.3 Fan Fail Alarm

'Fan Fail Alarm' occurs when the fan of the system is faulty. A faulty fan affects the system temperature and the system temperature may exceed the normal operational range.
While this alarm is active, if 'System Temperature Alarm' or 'System Thermal Runaway' occurs, the system may be powered off.

Symptoms

The following alarms are generated.

```
*2012-08-28 12:54:46 #system-CRT: Fan Fail alarm APC Declare rpm 0 0 0 0
```

Possible Causes

The fan is faulty.

Solutions

Contact the Samsung Technical Support Team for the countermeasure.

1.5.4 Thermal Shutdown Alarm

If the system detects that the system temperature is higher than the operational temperature due to faulty fan or temperature sensor, the system powers off for system protection.

Symptoms

The system powers off after generating the following alarm.

```
*2012-08-28 12:54:46 #system-CRT: System Thermal Runaway APC Fan
Controller Declare TEMP  98 99 99
```

Possible Causes

- The system temperature is higher than the thermal shutdown temperature.
- Both the temperature sensor and the fan are faulty at the same time.
- The temperature sensor has been faulty for 24 hours or longer.

Solutions

- Contact the Samsung Technical Support Team for the countermeasure.
- To recover the system, switch the power button from the OFF state to the ON state.

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1.5.5 Disk Usage Alarm

'Disk Usage Alarm' is generated when the usage space of the disk exceeds the threshold. (The default threshold of the disk usage ratio is 90 %.)

Symptoms

The following alarms are generated.

```
*2012-08-28 12:54:46 #system-MAJ: Disk Usage Alarm APC Disk Declare
Usage(91)
```

Possible Causes

The disk usage ratio exceeded the set threshold.

Solutions

On the APC system, execute the 'remove' command to delete the files which are not in use. If the alarm is not cleared even after deleting the files, contact the Samsung Technical Support Team for the countermeasure.

```
  WEC8500# file
  WEC8500/file# ls
Current working directory:   disk:/
directory      4.0K  Aug  4  08:38:02  opt
directory      4.0K  Aug 26  22:27:57  package
directory      4.0K  Aug 28  13:20:04  etc

WEC8500/file# cd package
WEC8500/file# ls
Current working directory:   disk:/package
 directory     4.0K  Aug 20  19:16:36  ap
 file         98.1M  Aug  3  08:18:33  wec8500_1.0.0.R.bin
 file         94.8M  Aug 11  14:38:13  wec8500_1.0.1.R.bin
 file         97.9M  Aug  2  19:20:37  wec8500_1.0.2.R.bin

WEC8500/file# remove wec8500_1.0.0.R.bin
'disk:/package/wec8500_0.5.0.R.bin' Do you really want to remove it ?
(y/n)
```

1.5.6 Disk Full Alarm

'Disk Usage Alarm' is generated when the usage space of the disk exceeds the threshold. When the alarm is generated, the file downloading function does not work for system protection. (Disk usage ratio threshold is 99 %.)

Symptoms

The following alarms are generated.

```
2012-08-28 09:54:51 CRT APC Disk Full Declare Disk usage has reached
to disk full limitation. Remove unnecessary files to recover the write
protection
```

Possible Causes

The disk usage ratio exceeded the set threshold.

Solutions

On the APC system, execute the 'remove' command to delete the files which are not in use. If the alarm is not cleared even after deleting the files, contact the Samsung Technical Support Team for the countermeasure.

```
WEC8500# file
WEC8500/file# ls
Current working directory:   disk:/
directory      4.0K  Aug   4  08:38:02  opt
directory      4.0K  Aug 26  22:27:57  package
directory      4.0K  Aug 28  13:20:04  etc

WEC8500/file# cd package
WEC8500/file# ls
Current working directory:   disk:/package
 directory     4.0K  Aug 20  19:16:36  ap
 file         98.1M  Aug  3  08:18:33  wec8500_1.0.0.R.bin
 file         94.8M  Aug 11  14:38:13  wec8500_1.0.1.R.bin
 file         97.9M  Aug  2  19:20:37  wec8500_1.0.2.R.bin

WEC8500/file# remove wec8500_1.0.0.R.bin
'disk:/package/wec8500_0.5.0.R.bin' Do you really want to remove it ?
(y/n)
```

1.6 SNMP

1.6.1 No SNMP response

There is no SNMP response from the APC if the Simple Network Management Protocol (SNMP) community settings are incorrect or the network is not connected.

Symptoms

When an SNMP get or set request is sent from the Management Information Base (MIB) browser, a timeout occurs.

Possible Causes

- SNMP community is not setup.
- The SNMP community server (or PC) and the APC are not connected to the network.

Solutions

1) Check that the SNMP community setting of the MIB browser and the SNMP community information of the APC match each other. If SNMP community is not setup or the information does not match, execute the ‘snmp community’ command to setup SNMP community

```
WEC8500# show snmp community
 Count  CommunityName    AccessType  IPAddress           Netmask
+-----+----------------+-----------+-------------------+-------+
 1      public           Read Only   0.0.0.0             0
```

If a problem occurs on SNMP set requests, also check that ‘AccessType’ is set to ‘Read Write’.

2) Execute the ‘ping’ command on the APC to check the network connection. If the command fails, contact your network administrator.

1.6.2 Trap cannot be sent

Since all alarms of the system are sent to the outside as SNMP Trap by default, any external management server used for receiving the system alarms must have its address registered as a trap target.

Symptoms

No trap is sent from the APC.

Possible Causes

- Not registered as a trap receiver on the APC.
- The Trap server (or PC) and the APC are not connected to the network.

Solutions

1) Check the trap receiver list of the APC. If the server is not on the list, execute the 'snmp trap' command to add an SNMP trap target.

```
WEC8500# show snmp trap
 Count TrapVersion TrapCommunityName IPAddress               Port
+-----+-----------+-----------------+----------------------+-----+
 1     Version 2   public            90.90.1.234             162
```

2) Execute the 'ping' command on the APC to check the network connection.
If the command fails, contact your network administrator

1.7 Configuration Management

1.7.1 Error when executing ‘save local’

The ‘save local’ command saves the currently active configuration information of the system. If there is an error with the ‘cm’ process which oversees various internal settings of the system or other processes related to settings are not working correctly, an error may occur when executing the ‘save local’ command.
The error also occurs if the system has insufficient disk space.

Symptoms

The following error message is generated when executing the ‘save local’ command.

```
WEC8500# save local
 Timeout: No Response from ...
```

or

```
WEC8500# save local
 Failed to get running-config.
Error: failed to save configuration.
```

or

```
WEC8500# save local
 Please, check the disk usage.
Error: failed to save configuration.
```

Possible Causes

- The ‘cm’ process is in an abnormal state.
- Other processes related to saving of settings are abnormal.
- Insufficient disk free space.

Solutions

1) Execute the ‘show processes status’ command to check the ‘Status’ of the ‘cm’ process. If the process is in an abnormal state, contact your system administrator.

```
WEC8500# show processes status
Processes Info.
Status:  D - usually IO, R - Running, S - Sleep
         T - Stop, X - Dead, Z - Zombie
         up - Active, down - Inactive
         dis - Disable
```

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```
id      name   pid    activationTime        status    restart
--      ------ ----   ------                ------    ------
........
8       cm     1856   2012-09-05 11:03:35   up(S)     0
```

2) Execute the ‘show processes status’ command to check the ‘Status’ of ‘evm’, ‘db’, ‘imi’, and ‘snmp’ which are the processes related to saving of system settings. If the process is in an abnormal state, contact your system administrator.

```
WEC8500# show processes status
Processes Info.
Status: D - usually IO, R - Running, S - Sleep
        T - Stop, X - Dead, Z - Zombie
        up - Active, down - Inactive
        dis - Disable

id      name   pid     activationTime        status  restart
--      ------ ----    ------                ------  ------
........
1       evm     1770   2012-09-05 11:03:08   up(S)   0
3       db      1817   2012-09-05 11:03:14   up(S)   0
18      imi    12268   2012-09-05 13:08:10   up(S)   0
29      snmpd   2466   2012-09-05 11:04:31   up(S)   0
........
```

3) Execute the ‘df’ command to check the disk usage space of the system, and if there is insufficient free space, delete the unnecessary files and try again.

```
WEC8500/file# df
Device: disk
Filesystem : ext4
Total size:  11.6G Free space:   100.0K

WEC8500/file# ls
Current working directory: disk:/
       directory    4.0K     Dec 26 16:47:06 etc
       file         1.0G     Dec 12 17:48:18 bigFile
       directory    4.0K     Dec 27 15:56:00 stats
WEC8500/file# remove bigFile

 'disk:/bigFile' Do you really want to remove it ? (y/n)

WEC8500/file# df
Device: disk
Filesystem : ext4
Total size:  11.6G Free space:   1.0G
```

1.7.2 Error when executing ‘import’

When executing the ‘import’ command in order to apply an imported configuration file to the system, entering the file name with the extension results in an error with a message saying that ‘the file does not exist’. An error also occurs if the file is invalid.
The error also occurs if the system has insufficient disk space.

Symptoms

An error message is generated saying that ‘he file does not exist.’

```
WEC8500# file
WEC8500/file# cd etc/config
WEC8500/file# ls
Current working directory: disk:///etc/config
 file         7.0M  Jan  2 06:22:23 test.wec8500.config

WEC8500/file# end
WEC8500# import test.wec8500.config
 File(/etc/config/test.wec8500.config.wec8500.config) does not exist.
Error: failed to apply the configuration file.
```

or

```
WEC8500# import test
 Failed to extract file(/etc/config/test.wec8500.config).
Error: failed to apply the configuration file.
```

or

```
WEC8500# import test
 Please, check the disk usage.
Error: failed to apply the configuration file.
```

Possible Causes

- When entering the configuration file name, the ‘.APC model name.config’ extension was also entered.
- The configuration file being imported is corrupted or invalid.
- Insufficient disk free space.

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Solutions

1) When entering the file name, enter only the file name without the extension.

```
WEC8500# import test
reset_code: 61
 test.wec8500.config file compressed on etc/config is decompressed
into import directory.
 SUCCESS !!
 Warning: System will reboot !!
```

2) The configuration file is abnormal; use another file.

3) Check the disk usage space of the system, and if there is insufficient free space, delete the unnecessary files and try again.

```
WEC8500/file# df
Device: disk
Filesystem : ext4
Total size:  11.6G Free space:   100.0K

WEC8500/file# ls
Current working directory: disk:/
       directory    4.0K     Dec 26 16:47:06 etc
       file         1.0G     Dec 12 17:48:18 bigFile
       directory    4.0K     Dec 27 15:56:00 stats
WEC8500/file# remove bigFile

 'disk:/bigFile' Do you really want to remove it ? (y/n)

WEC8500/file# df
Device: disk
Filesystem : ext4
Total size:  11.6G Free space:   1.0G
```

1.7.3 Error when executing ‘export’

The ‘export’ command saves the currently active configuration information of the system using the file name specified. If other processes related to settings are not working correctly, an error may occur when entering the ‘export’ command. The error also occurs if the system has insufficient disk space.

Symptoms

The following error message is generated when executing the command.

```
WEC8500# export test
 Failed to get running-config.
Error: failed to create the configuration file.
```

or

```
WEC8500# export test
 Please, check the disk usage.
Error: failed to create the configuration file.
```

Possible Causes

- Other processes related to saving of settings are abnormal.
- Insufficient disk free space.

Solutions

1) Check the ‘Status’ of ‘evm’, ‘db’, ‘imi’, and ‘snmp’ which are the processes related to saving of system settings. If the process is in an abnormal state, contact your system administrator.

```
WEC8500# show processes status
Processes Info.
Status: D - usually IO, R - Running, S - Sleep
        T - Stop, X - Dead, Z - Zombie
        up - Active, down - Inactive
        dis - Disable

id      name    pid     activationTime        status  restart
--      ------  ----    ------                ------  ------
........
1       evm     1770    2012-09-05 11:03:08   up(S)   0
3       db      1817    2012-09-05 11:03:14   up(S)   0
18      imi     12268   2012-09-05 13:08:10   up(S)   0
29      snmpd   2466    2012-09-05 11:04:31   up(S)   0
........
```

2) Check the disk usage space of the system, and if there is insufficient free space, delete the unnecessary files and try again.

```
WEC8500/file# df
Device     : disk
Filesystem  : ext4
Total size  :  11.6G Free space:   100.0K

WEC8500/file# ls
Current working directory: disk:/
       directory    4.0K     Dec 26 16:47:06 etc
       file         1.0G     Dec 12 17:48:18 bigFile
       directory    4.0K     Dec 27 15:56:00 stats
WEC8500/file# remove bigFile

 'disk:/bigFile' Do you really want to remove it ? (y/n)

WEC8500/file# df
Device     : disk
Filesystem  : ext4
Total size  :  11.6G Free space:   1.0G
```

1.8 Web UI

1.8.1 Access error

An error occurs when attempting to access the APC system using the web browser.

Symptoms

When the IP address of the APC is entered in the address input field of the web browser, the web user interface (UI) is not accessed but the following error message is generated.

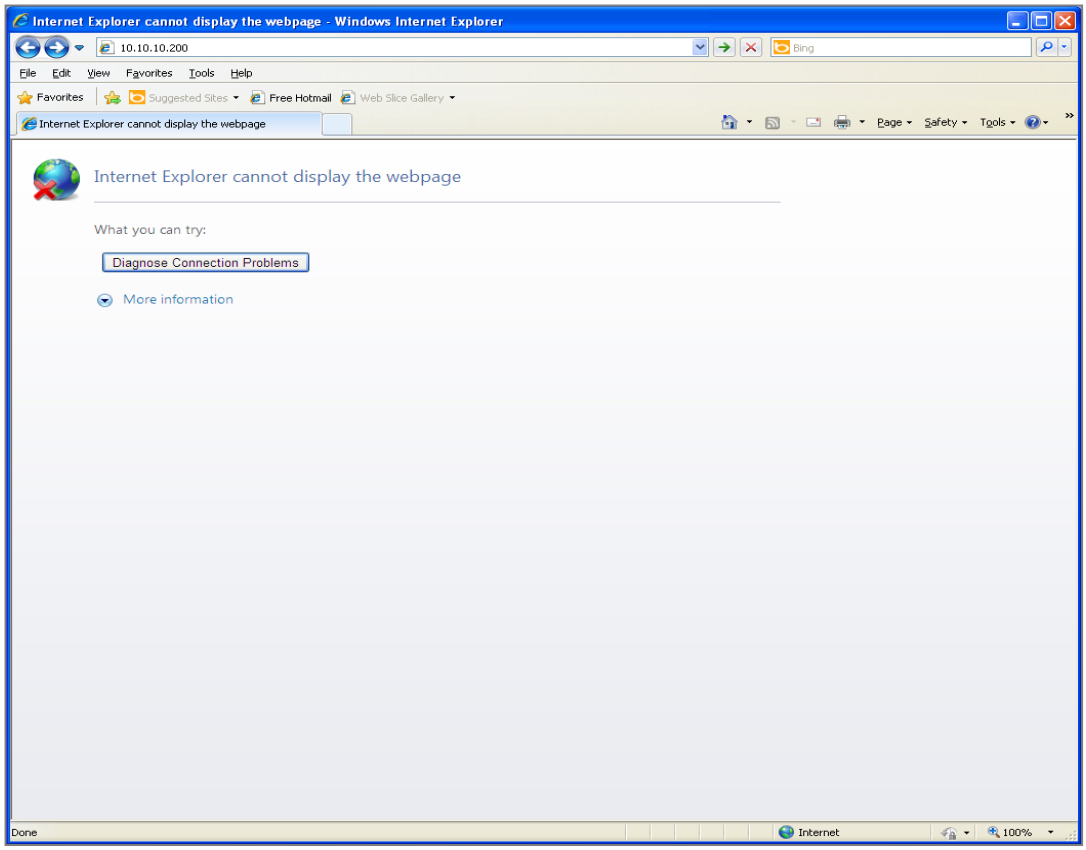

Figure 1. Web UI Access Error Window

Possible Causes

- The network is not connected.
- Web server related processes are abnormal.

Solutions

1) Execute the ‘ping’ command to check the network connection. If the command fails, contact your network administrator.
2) Execute the ‘show processes’ command to check that the ‘httprd’, ‘snmpd’, and ‘WebAgent’ processes are in ‘up’ ‘status’.

```
WEC8500# show processes
Processes Info.
Status: D - usually IO, R - Running, S - Sleep
        T - Stop, X - Dead, Z - Zombie
        up - Active, down - Inactive
        dis - Disable

id      name     pid   activationTime       status  reStart
--      ------   ----  ------               ------  ------
 …
 32     httprd   2387  2012-08-31 13:47:08  up(S)   0
 33     snmpd    2443  2012-08-31 13:47:08  up(S)   0
 34     WebAgent 2444  2012-08-31 13:47:14  up(S)   0
```

1.8.2 Login error

Symptoms

When attempting to log in at the Web UI, login fails and the ‘Incorrect ID or password’ error message is shown.

Figure 2. Web UI Login Error Window

Possible Causes

The login account is not registered.

Solutions

‘Execute the ‘show mgmt-users’ command to check the login account settings.

```
WEC8500# show mgmt-users

ALL USERS:

no.       NAME            LEVEL           DESCRIPTION
+-------------------------------------------------------------------+
 1:  samsung             :  1     :
```

If the login account does not exist, execute the ‘mgmt-users’ command to add the login account.

```
WEC8500# configure terminal
WEC8500/configure# mgmt-user user password pwd 1
```

CHAPTER 2. WLAN Management

This chapter describes the possible problems and their solutions concerning WLAN which is the most essential for WE wireless LAN services.

2.1 WLAN Settings

2.1.1 BSSID of WLAN is not generated

The AP does not provide wireless service to the wireless station attempting to connect.

Symptoms

The WLAN is setup with a Service Set Identifier (SSID), but the wireless station is unable to find the SSID. The Basic Service Set Identifier (BSSID) information can be checked by executing the following command.

```
WEC8500# show bss-if
```

Possible Causes

- The WLAN is not in ‘Enable’ state.
- AP Group, Interface Group, Radio band, or SSID is not entered when setting up the WLAN.
- The AP is in ‘down’ status.

Solutions

1) Check that the WLAN is in ‘Enable’ status. Also, check that the correct values are entered for ‘Radio ID’, ‘If-Group’, and ‘Ap-Group’.

```
WEC8500# show wlan summary
 WLAN_ID Radio_ID     SSID          Status  Wlan_NAME If-Group  Ap-Group
======== ======== ==============  ======= ========= ======== =========
    1     2.4G/5G     test1         Enable    wlan1       1         1
```

2) Check that the AP attempting to access for service is a member of the AP-Group ID specified in the WLAN settings.

```
WEC8500# show ap-group summary

 APG_ID  APG_NAME   WLAN_Count    WLAN_List    AP_Count     AP_List
 ======  ========   ========== =============== ======== ===============
   1     default         1            1            3        [1][2][3]
```

3) Check that the interface group ID (‘IF_GRP_ID’) of the WLAN is valid.

```
WEC8500# show if-group
 IF_GRP_ID   IF_GRP_NAME    IF_Count            IF_List
    1           ifg1           1           vlan1.110 [10110]
```

4) Check that the AP ‘State’ is normal (‘1/1/5’).

```
WEC8500# show ap summary

 AP Mgnt interface IP : 100.100.100.51 (vlan1.110)

 AP_ID  Profile  AP_NAME MAC_Address            IPv4Addr       State
  Location
======  ======= ======== ===========            ========       =====
=============
   1     ap_1  AP_2334420 20:11:22:33:44:20 100.100.100.101    1/1/5
   test1
```

2.2 Access Authentication of Wireless Station

When a wireless station attempts to connect to a wireless fidelity (Wi-Fi) network configured for 802.1x or pre-shared key (PSK) authentication, authentication fails.
If disconnected due to authentication failure, information of the wireless stations is deleted from the system.

2.2.1 802.1x authentication failure

Symptoms

When a wireless station attempts to connect to a Wi-Fi network configured for 802.1x authentication, (re)association is performed normally but there is an error with 802.1x authentication. In this case, (re)association information of the wireless station can be checked in the following way.

The information can be checked executing a CLI command in the following way.

```
WEC8500# show station summary
```

The information can be checked using the Web UI in the following way.

1) On the top menu, click Monitor.
2) On the left menu, click Stations.

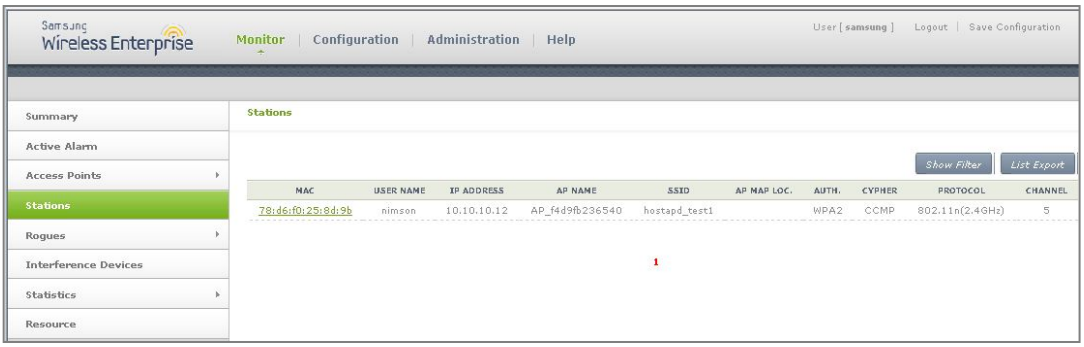

Figure 3. Web UI-802.1x authentication failure

Possible Causes

- Wi-Fi network authentication settings of the wireless station are incorrect.
- WLAN security settings of the APC are incorrect.
- There is a problem with network connection of the Remote Authentication Dial-In User Service (RADIUS) authentication server system.
- The RADIUS authentication server is not running.
- Settings of the RADIUS authentication server are incorrect.

Solutions

1) Check Wi-Fi network authentication settings of the wireless station. Check that 802.1x, ID, and password settings match those of the APC and the RADIUS authentication server. (For details on checking the authentication settings of the wireless station, see the user manual of the respective product.)

2) Check that the WLAN security option of the APC is set to 802.1x. If the security option is not 802.1x, change the option by referring to the Operation Manual of the APC.

   The information can be checked executing a CLI command in the following way.

```
WEC8500# show wlan security summary
WEC8500# show wlan security detail <wlan id>
```

   The information can be checked using the Web UI in the following way.

   ① On the top menu, click Configuration.
   ② On the left menu, click WLANs.
   ③ On the WLAN list, click the WLAN ID.
   ④ Click the Security tab.
   ⑤ Click L2 to check the settings.
   ⑥ Click Radius to check the settings.

3) Check that the RADIUS server settings are correct.

   The information can be checked executing a CLI command in the following way.

```
WEC8500# show security radius-server summary
WEC8500# show security radius-server detail <server id>
```

   The information can be checked using the Web UI in the following way.

   ① On the top menu, click Configuration.
   ② On the left menu, click Security > AAA (Stations) > RADIUS in order.
   ③ On the WLAN list, click the WLAN ID.
   ④ On the RADIUS server list, click the ID to check the settings.

4) Check that the network cable is correctly connected to the RADIUS authentication server system. Also, check if the IP address of the RADIUS system is correctly configured for the network environment through the network administrator

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5) Check the RADIUS authentication server. Check if the RADIUS server is available for service and that the user information of the wireless station is correctly registered to the RADIUS authentication server.
(For details on checking the RADIUS authentication server, check the user manual of the corresponding product)

2.2.2 PSK authentication failure

Symptoms

When a wireless station attempts to connect to a Wi-Fi network configured for PSK authentication, (re)association is performed normally but there is an error with PSK authentication. In this case, (re)association information of the wireless station can be checked in the following way.

The information can be checked executing a CLI command in the following way.

```
WEC8500# show station summary
```

The information can be checked using the Web UI in the following way.

1) On the top menu, click Monitor.
2) On the left menu, click Stations.

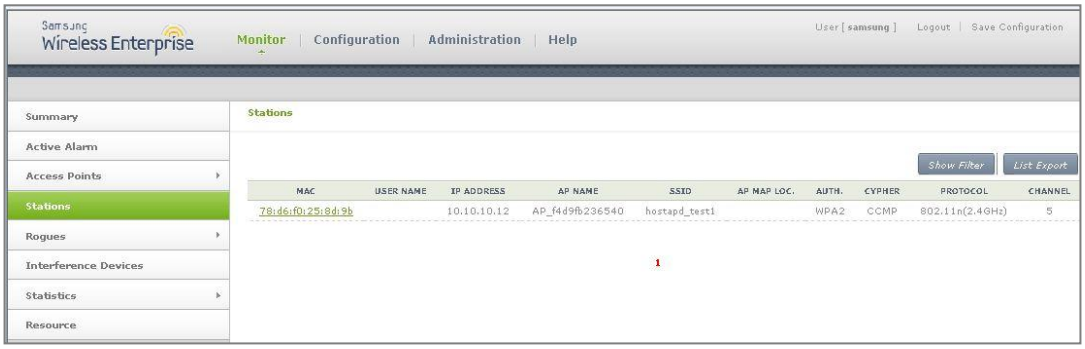

Figure 4. Web UI-PSK authentication failure

Possible Causes

- Wi-Fi network authentication settings of the wireless station are incorrect.
- WLAN security settings of the APC are incorrect.

Solutions

1) Check Wi-Fi network authentication settings of the wireless station. Check if PSK is enabled, and check if the key setting is correct. (For details on checking the wireless station, see the user manual of the respective product.)
2) Check if the WLAN security option of the APC is set to PSK. If the security option is not PSK, change the option by referring to the Operation Manual of the APC.

The information can be checked executing a CLI command in the following way.

```
WEC8500# show wlan security summary
WEC8500# show wlan security detail <wlan id>
```

The information can be checked using the Web UI in the following way.

① On the top menu, click Configuration.
② On the left menu, click WLANs.
③ On the WLAN list, click the WLAN ID.
④ Click the Security tab.
⑤ Click L2 and Check the settings.

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2.2.3 Static WEP access failure

Symptoms

When a wireless station attempts to connect to a Wi-Fi network configured for Static WEP, (re)association is performed normally but subsequent communication fails the connection is lost after some time. In this case, (re)association information of the wireless station can be checked in the following way.

The information can be checked executing a CLI command in the following way.

```
WEC8500# show station summary
```

The information can be checked using the Web UI in the following way.

1) On the top menu, click Monitor.
2) On the left menu, click Stations.

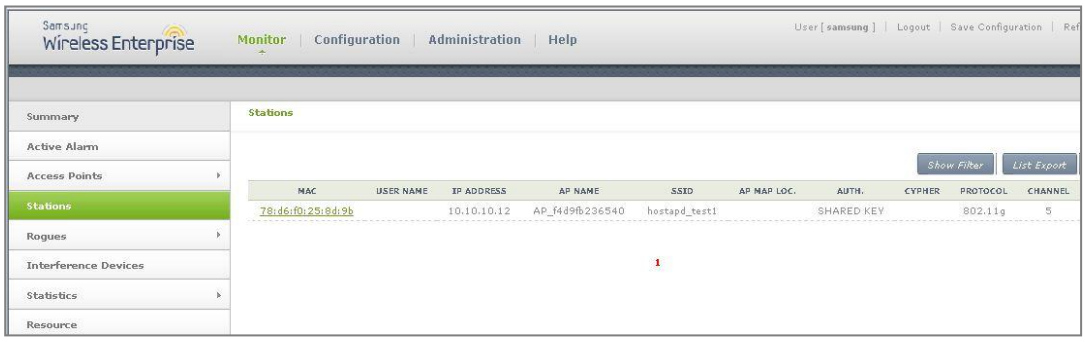

Figure 5. Web UI-Static WEP access failure

Possible Causes

- Wi-Fi network authentication settings of the wireless station are incorrect.
- WLAN security settings of the APC are incorrect.

Solutions

1) Check Wi-Fi network authentication settings of the wireless station. Check if the Static WEP key setting is correct. (For details on checking the wireless station, see the user manual of the respective product.)

2) Check if the WLAN security option of the APC is set to Static WEP. If the security option is not Static WEP, change the option by referring to the Operation Manual of the APC.

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The information can be checked executing a CLI command in the following way.

```
WEC8500# show wlan security summary
WEC8500# show wlan security detail <wlan id>
```

The information can be checked using the Web UI in the following way.

① On the top menu, click Configuration.
② On the left menu, click WLANs.
③ On the WLAN list, click the WLAN ID.
④ Click the Security tab.
⑤ Click L2 and Check the settings

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2.3 Additional WLAN Services

2.3.1 Clustering function does not work

Symptoms

Wireless station information of the Remote Access Point Controller (APC) cannot be founded.

Possible Causes

- Inter APC communication is not possible.
- The APC is not registered in the APC list in the clustering group.
- The APC settings do not match in the clustering group.

Solutions

1) Execute the 'ping' command to check the network connection. If the command fails, contact your network administrator.

```
WEC8500# ping 192.168.87.217
```

2) If the network connection status is normal, check if the APC is registered in the cluster group.
If so, check if **INDEX** and **IPv4-ADDRESS** match. Also, check that ConnectStatus is **'CONNECTED[1]**'.
If the **CONNECT-STATUS** is displayed as '**NOT_CONNECTED[0]'** even though the both information match, check if the clustering function is set to 'Enable' and the status of the interface with the IP address assigned is 'up'.

The information can be checked executing a CLI command in the following way.

```
WEC8500# show cluster list-apc
=============================================================================
INDEX  APC-NAME        IPv4-ADDRESS     DB-REF-INT   CONNECT-STATUS
=============================================================================
 1     APC-1           192.168.87.146   120          CONNECTED[1]
 2     APC-2           192.168.87.217   120          CONNECTED[1]
=============================================================================
```

The information can be checked using the Web UI in the following way.

① On the top menu, click Configuration.
② On the left menu, click Mobility Management.
③ Click the Clustering tab.
④ Check the CONNECT STATUS information.

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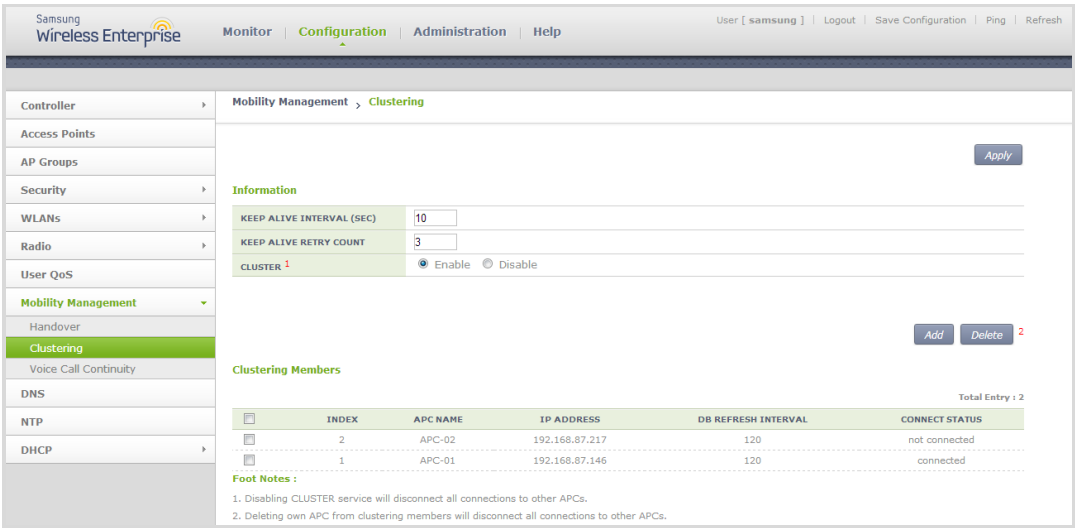

Figure 6. Web UI-Clustering function does not work

2.3.2 Spectrum analysis is not provided

This can occur if spectrum analysis is not setup or there is a problem with the connection between the APC and the AP.

Symptoms

Reporting function of spectrum analysis is not provided.

Possible Causes

- The reporting function is not enabled.
- There is an error with the Control And Provisioning Wireless Access Point (CAPWAP) which is the connection between the APC and the AP.

Solutions

1) Check the spectrum analysis setting of the AP.

```
WEC8500# show spectrum-analysis config ap 1
…
Report Settings:
    Sample Report (FFT)..................................... Disabled
    Interference Report..................................... Enabled
    Duty Cycle Report....................................... Disabled
…
```

If Report Settings of spectrum analysis is not in ‘Enable’ state, enter the following command.

For FFT:

```
WEC8500/configure/spectrum-analysis/apid 1# configuration-request
sample enable
```

For Duty Cycle:

```
WEC8500/configure/spectrum-analysis/apid 1# configuration-request
duty-cycle enable
```

For Interference:

```
WEC8500/configure/spectrum-analysis/apid 1# configuration-request
interference enable
```

2) Check the ‘State’ of CAPWAP. If the state is not normal (‘1/1/5’), solve the problem by referring to ‘CAPWAP Status is not RUN’.

```
WEC8500# show ap summary
 AP Mgmt interface IP: 100.100.100.1 (vlan1.200)
AP_ID  CFG_NAME  AP_Name          Mac_Address          IPv4Addr
State
 1     ap_1      AP_f4d9fb23c3f9  00:11:22:33:44:55    100.100.100.38
1/1/5
```

3) Contact the system administrator.

2.3.3 Max clients restriction function does not work

Symptoms

Max clients restriction function for each wireless band or each WLAN is not working and associations are permitted.

Possible Causes

- There is an error with the connection (CAPWAP) between the APC and the AP.
- Max clients restriction setting of the AP is incorrect.

Solutions

1) Check the 'State' of CAPWAP. If the state is not normal ('1/1/5'), solve the problem by referring to 'CAPWAP Status is not RUN'

```
WEC8500# show ap summary
 AP Mgmt interface IP: 100.100.100.1 (vlan1.200)
AP_ID  CFG_NAME    AP_Name          Mac_Address        IPv4Addr
State
  1      ap_1   AP_f4d9fb23c3f9  00:11:22:33:44:55   100.100.100.38
1/1/5
```

2) Check the max client restriction setting of AP.

5 GHz:

```
AP# show config radio interface1 max_radio_clients
Allowed max clients per radio ..................... 127
```

2.4 GHz:

```
AP# show config radio interface2 max_radio_clients
Allowed max clients per radio ..................... 127
```

5 GHz/WLAN ID 1:

```
AP# show config wlan bss_1_1 max_bss_clients
Allowed max clients per bss ....................... 127
```

3) If the setting is different from that of the APC, check step 1) first.
If the CAPWAP state is normal ('1/1/5'), reset the access restriction by referring to the APC Operation Manual.

4) Contact the system administrator

CHAPTER 3. Connection Management with AP

This chapter describes the possible problems and their solutions when connecting to the access point (AP).

3.1 CAPWAP Status is not RUN

3.1.1 AP network setting error

Symptoms

CAPWAP Status of the AP is not changed to 1/2/0 and cannot be connected to the APC.

```
WEC8500# show ap summary

 AP Mgnt interface IP : 10.10.10.11 (vlan1.110)

 AP_ID   Profile         AP_NAME          MAC_Address       IPv4Addr
State     Location
====== ========== ================== =============== ================
======= ==========
   2       ap_2     AP_0000aa161616   00:00:aa:16:16:16     0.0.0.0
 1/2/0
```

Possible Causes

- IP setting of the AP is incorrect.
- IP setting of the AP is incorrect in the APC.
- IP of the AP is setup in duplication.
- The AP is setup for DHCP, but the DHCP server does not respond or allocates an IP address in violation of the IP policy.
- The default VLAN settings are incorrect.

Checking and Solving the Problem

1) From the APC, try to ping the AP's IP address.

[Pinging from APC to AP]
Check whether the APC can ping the AP's IP address, and check that there is no problem with the network settings.

```
WEC8500# ping 100.100.100.10 → AP's IP address is 100.100.100.10

ping 100.100.100.10
PATTERN: 0x2505
PING 100.100.100.10 (100.100.100.10) 64(92) bytes of data.
72 bytes from 100.100.100.10: icmp_seq=1 ttl=64 time=0.089 ms
72 bytes from 100.100.100.10: icmp_seq=2 ttl=64 time=0.055 ms
72 bytes from 100.100.100.10: icmp_seq=3 ttl=64 time=0.066 ms
72 bytes from 100.100.100.10: icmp_seq=4 ttl=64 time=0.060 ms
72 bytes from 100.100.100.10: icmp_seq=5 ttl=64 time=0.068 ms

--- 100.100.100.10 ping statistics ---
5 packets transmitted, 5 received, 0% packet loss, time 1998ms
rtt min/avg/max/mdev = 0.055/0.067/0.089/0.014 ms
```

If ping fails, connect to the AP from the console to check the current IP setting information and check the AP → APC network connection.

```
AP# show config interface summary → Check the network setting
information
Name ..................................... br0
Mode ..................................... Static
MAC ...................................... F4:D9:FB:34:18:60
IP address ............................... 100.100.1.200
Subnet Mask .............................. 255.255.255.0
Gateway address .......................... 100.100.1.1
PHY Status ............................... UP
Interface Status ......................... UP

AP# show config network summary → Check the network status information
APC Count ................................ 0
DNS Count ................................ 0
NTP Count ................................ 0
NTP Interval ............................. default(600)
TimeZone ................................. Asia/Seoul
Network test target ...................... gw
Network test interval .................... 20
Network test idle interval ............... 1
Network test duplication interval ........ 180
Network test result ...................... Success
```

```
AP# ping 100.100.100.1 → 100.100.100.1 is APC Mgnt interface IP
address
PING 100.100.100.1 (100.100.100.1): 56 data bytes
64 bytes from 100.100.100.1: icmp_seq=0  ttl=63 time=1.302 ms
64 bytes from 100.100.100.1: icmp_seq=1  ttl=63 time=1.170 ms
64 bytes from 100.100.100.1: icmp_seq=2  ttl=63 time=0.853 ms
64 bytes from 100.100.100.1: icmp_seq=3  ttl=63 time=0.730 ms
64 bytes from 100.100.100.1: icmp_seq=4  ttl=63 time=0.754 ms
64 bytes from 100.100.100.1: icmp_seq=5  ttl=63 time=0.973 ms
64 bytes from 100.100.100.1: icmp_seq=6  ttl=63 time=0.942 ms
64 bytes from 100.100.100.1: icmp_seq=7  ttl=63 time=0.853 ms
64 bytes from 100.100.100.1: icmp_seq=8  ttl=63 time=0.760 ms
64 bytes from 100.100.100.1: icmp_seq=9  ttl=63 time=0.849 ms
64 bytes from 100.100.100.1: icmp_seq=10 ttl=63 time=1.454 ms
--- 100.100.100.1 ping statistics ---
11 packets transmitted, 11 packets received, 0% packet loss
round-trip min/avg/max/stddev = 0.730/0.967/1.454/0.229 ms
```

If ping fails and there is an error with the network setting information, reset it.

```
AP# config interface address 100.100.100.10 255.255.255.0
100.100.100.1
→ Network setting (IP – 100.100.100.10/24, G/W – 100.100.100.1)
```

2) Check if the AP's IP address is incorrectly set in the APC.
If the AP's IP is set in the APC, the AP receives the IP information set in the APC during the provisioning stage and operates using the IP address. In that case, if AP's IP address is incorrectly set in the APC, the network information is incorrectly set in AP. Therefore, if IP mode of the AP in the AP profile information is static, check that the IP address, Gateway, and Netmask values are correctly set according to the network settings

[Checking AP IP settings from APC]
If the AP profile information is ap_1, check in the following way.

```
WEC8500# show ap ap_detail ap_1 → 'ap_1' means ap profile name

================== AP Config =================

 AP name                 :
 AP_ID                   : 1
 AP profile name         : ap_1
 Group ID                : 1
 MacAddr                 : 00:00:00:00:00:00
 Location                :
 Admin Status            : UP
 Operational Status      : Down
```

```
 ApMode                   : General
 Region                   : Local
 ClientIpAddress          : 0.0.0.0
 EchoInterval             : 30
 MaxDiscoveryInterval     : 20
ReportInterval            : 120
 StatisticsTimer          : 120
 RetransmitInterval       : 5
 MaxRetransmit            : 5
 EchoRetransmitInterval   : 3
 MaxEchoRetransmit        : 5
 TelnetEnable             : Disable (50023)
 SshEnable                : Disable (50022)
 Uptime                   :  0day(s) 00:00:00
 Capwap Uptime            :  0day(s) 00:00:00
 Last Join time           :
 IP mode                  : AP Followed
 StaticIpAddress          : 0.0.0.0
 StaticIpNetmask          : 0.0.0.0
 StaticIpGateway          : 0.0.0.0
 Link Speed               : N/A
 Duplex                   : N/A
 VlanSupport              : Disable
 NativeVlanId             : 0
 FragmentSize             : 1400
 RebootCause              : 0x0 -
 PrimaryControllerName    : N/A
 SecondaryControllerName  : N/A
 TertiaryControllerNames  : N/A
 CfgMask                  : Auto
 DTLS Policy              : Disable
 Discovery Type           : AP-Followed(Static)
 Edge Ap                  : Disable
 ApModelNumber            :
 ApSerialNumber           :
 BoardId                  : 0
 BaseMacAddr              : 00:00:00:00:00:00
 ActiveSoftwareVersion    :
 BootVersion              :
 OtherSoftwareVersion     :
 Power Status             : Unknown
 LED Mode                 : On
```

If there is an unnecessary AP IP setting, clear the setting in the following way.

```
WEC8500# configure terminal
WEC8500/configure# ap ap_1 → 'ap_1' means ap profile name
WEC8500/configure/ap_1# profile ip-mode ap
→ Do not change the IP address that was configured in the AP
```

3.1.2 AP management IP in APC setting error

Symptoms

CAPWAP Status of the AP is not changed to 1/2/0 and cannot be connected to the APC.

```
WEC8500# show ap summary

 AP Mgnt interface IP : 10.10.10.11 (vlan1.110)

 AP_ID   Profile         AP_NAME         MAC_Address        IPv4Addr
State   Location
====== ========== ================== ================ ================
===== ===========
   2       ap_2     AP_0000aa161616   00:00:aa:16:16:16     0.0.0.0
 1/2/0
```

Possible Causes

The APC AP Mgnt interface IP setting is incorrect.

Checking and Solving the Problem

1) Check if the AP can ping other interfaces of the APC but not the AP Mgnt interface IP.
2) Retrieve the interface state of APC AP Mgnt interface IP and check that it is ‘up’.

[Checking AP Mgnt Interface IP Info from APC]

Check if the AP Mgnt interface IP information is a valid interface and the status of interface is up.

```
WEC8500/configure# show apc summary → Check the APC AP Mgnt interface
IP

 ===== APC Summary =====
  AP Mgnt interface IP       : 100.100.100.1 (vlan1.100)
  MaxApNo                    : 500
  ActiveApNo                 : 10
  TotalApNo                  : 117
  802.11a/n Radios           : 10/107
  802.11b/g/n Radios         : 10/107
  ActiveStationNo            : 1
  SecurityAuthType           : X.509
  RMacField                  : Support
  DtlsPolicy                 : Clear-text
```

```
WEC8500/configure# show ip interface brief
→ Check the APC AP Mgnt interface Status

Interface          IP-Address           Status             Protocol
lo                 127.0.0.1            up                 up
mgmt0              10.254.174.183       up                 up
ge1                unassigned           up                 down
ge2                unassigned           up                 up
ge3                30.30.30.1           up                 down
ge4                unassigned           up                 down
ge5                unassigned           up                 down
ge6                unassigned           up                 down
ge7                unassigned           up                 down
ge8                unassigned           up                 down
xe1                unassigned           up                 down
xe2                unassigned           up                 down
vlan1.1            unassigned           up                 up
vlan1.10           10.10.10.1           up                 up
vlan1.100          100.100.100.1        up                 up
```

If the AP Mgnt interface IP information is incorrect, configure it in the following way.

```
WEC8500# configure terminal
WEC8500/configure# apc ap-mgmt-if 100.100.100.1
→ AP Mgnt interface IP for AP access
```

3.1.3 AP registration error

Symptoms

The AP information is not registered.

```
WEC8500# show ap summary

 AP Mgnt interface IP : 10.10.10.11 (vlan1.110)

 AP_ID   Profile         AP_NAME        MAC_Address        IPv4Addr
State  Location
====== ========== ================== ================ ================
===== ===========
```

Possible Causes

The AutoDiscovery function is off and the AP information is not registered.

Checking and Solving the Problem

1) Check if the AP information (MAC information is used as the identifier of each AP) is registered in the APC.
2) Check if the AutoDiscovery function is enabled.

[Checking the AutoDiscovery Function]

- If the AutoDiscovery function is enabled for the APC, when an AP sends a discovery request to the APC, it is automatically registered.
- The registered information is not deleted.
- If the AutoDiscovery function is disabled, the AP information must be manually registered in the APC.

```
WEC8500/configure# show apc capwap summary

 ===== Capwap Summary =====
  capwap control source port number  : 5246
  capwap data source port number     : 5247
  capwap control DTLS mode           : Support
  capwap WindowSize                  : 10
  capwap ChangeStatePendingTimer     : 25
  capwap DataCheckTimer              : 30
  capwap DtlsSessionDelete           : 1
  capwap RetransmitInterval          : 5
  capwap WaitDTLSTimer               : 60
  capwap WaitJoinTimer               : 60
  capwap DiscoveryDeleteTimer        : 10
  capwap MaxRetransmit               : 5
```

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```
  capwap MutalAuth             : Enable
  capwap DiscoveryByMulticast  : Enable
  capwap DiscoveryByBroadcast  : Enable
  capwap FallbackEnable        : Disable
  capwap ECNSupport            : Limited
  capwap AutoDiscovery         : Enable
  capwap AutoDiscoveryApGroup  : 1
  capwap ApAdminUser           : 0
  capwap ApAdminPass           : 0
  capwap ApGuestUser1          : 0
  capwap ApGuestPass1          : 0

    MulticastIfIndexList       : 1
        vlan1.100
```

If the APC's AutoDiscovery function is disabled, enable it in the following way.

```
WEC8500# configure terminal
WEC8500/configure# apc capwap auto-discovery
→ Enable the AutoDiscovery function.
```

To disable the APC's AutoDiscovery function and register the AP manually, use the following way.

```
WEC8500# configure terminal
WEC8500/configure# ap ap_1
WEC8500/configure/ap_1# profile mac 00:00:aa:16:16:16
→ Register AP by using the AP MAC information.
```

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3.2 Automatic Upgrade does not Work on AP

When attempting a CAPWAP connection, if the firmware version of the AP registered with the APC is different from the firmware version the AP is actually running, the AP is automatically upgraded.

Symptoms

Automatic Upgrade does not Work on AP.

Version information of 'Default' Type of 'weafama' PKG_Name checked with 'show ap upgrade summary' must be the same as the firmware version of the AP.
Firmware version information of the AP can be checked under Version (current) of the AP_ID executing the 'show ap upgrade list'.

```
WEC8500# show ap upgrade summary

 ===== ap upgrade config summary =====
Type             : Default
Mode             : FTP
Path             : package/ap
IpAddress        : 10.10.10.11
PortNum          : 21
MAXretries       : 3
MAXdownload      : 3
currentDownload  : 0
waitApCount      : 0
Target           : All

      PKG_Name    Version           FileName     Type
      weafama     1.2.6.R           weafama_1.2.6.R.bin Default
      weafama                       Quick Upgrade
      weafama                       Predownload

WEC8500# show ap upgrade list

   /* (RC/FR/RC) : RetryCount/FailReason/RebootCause
   /* Pri : VersionPriority (MD-model,A-AP config)
 AP_ID   Model    Version(config/current)    Status(RC/FR/RC) Pri force
    1     WEA303i  Global/ 1.2.6.R           None( 0/ 0/128)   MD  No
```

Possible Causes

- Upgrade image of the AP is not correctly registered.
- Operation status of the File Transfer Protocol (FTP) server is not normal.
- Cause of the AP restart was ‘upgrade fail’.
- The AP includes an item requiring manual upgrade.

Solutions

1) Check the upgrade settings of the AP.

```
WEC8500# show ap upgrade summary

 ===== ap upgrade config summary =====
Type              : Default
Mode              : FTP
Path              : package/ap
IpAddress         : 10.10.10.11
PortNum           : 21
MAXretries        : 3
MAXdownload       : 3
currentDownload   : 0
waitApCount       : 0
Target            : All

      PKG_Name     Version           FileName     Type
      weafama                        Default
      weafama                        Quick Upgrade
      weafama                        Predownload
```

If there is no firmware version of the AP, a new firmware image to be used in upgrade must be registered.
The example below illustrates registration of an upgrade firmware of the ‘wea302’ AP.

```
WEC8500# configure terminal
WEC8500/configure# ap-all
WEC8500/configure/ap-all# upgrade
WEC8500/configure/ap-all/upgrade# select-package default
weafama_1.2.6.R.bin

WEC8500# show ap upgrade summary
```

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```
===== ap upgrade config summary =====
Type             : Default
Mode             : FTP
Path             : package/ap
IpAddress        : 10.10.10.11
PortNum          : 21
MAXretries       : 3
MAXdownload      : 3
currentDownload  : 0
waitApCount      : 0
Target           : All

      PKG_Name     Version             FileName     Type
      weafama      1.2.6.R             weafama_1.2.6.R.bin Default
      weafama                          Quick Upgrade
      weafama                          Predownload
```

2) Check if the FTP server is in normal state.

```
WEC8500# show ftp-server
 FTP-Server        : Stop       Port       : 21
 FTP-User          : samsung    Pw         : *******
```

If the FTP server is in 'Stop' state, enter the 'ftp-server enable' command to set it to 'Run' state.

```
WEC8500# configure terminal
WEC8500/configure# ftp-server enable
FTP Server on
WEC8500/configure# show ftp-server
 FTP-Server        : Run        Port       : 21
 FTP-User          : samsung    Pw         : *******
```

3) Check the AP rebooting cause and restart the AP.

```
WEC8500# show ap detail ap_1

 ===== AP Config =====
  AP name          : AP_001632ff8e2b
  AP_ID            : 1
  AP profile name  : ap_1
  Group ID         : 1
  MacAddr          : 00:16:32:ff:8e:2b
……
 RebootCause       : 0x51 - reboot due to package upgrade failure
……
```

```
WEC8500# configure terminal
WEC8500/configure# ap ap_1
WEC8500/configure/ap ap_1# reboot
```

4) Check if the AP has items requiring manual upgrade, and if so, delete them.

```
WEC8500/configure/ap ap_1# show ap upgrade list

  /* (RC/FR/RC) : RetryCount/FailReason/RebootCause
  /* Pri : VersionPriority (MD-model,A-AP config)
 AP_ID  Model    Version(config/current)   Status(RC/FR/RC) Pri force
   1    WEA303i  1.2.5.R/ 1.2.5.R          None( 0/ 0/ 16)  AP  No
```

To delete items requiring manual upgrade, execute 'no upgrade-request' in AP mode. You can check that the items requiring manual upgrade are deleted.

```
WEC8500/configure/ap ap_1# no upgrade-request

WARNING: AP will be upgrade.
Are you sure you want to continue? (y/n) : y
WEC8500/configure/ap ap_1# show ap upgrade list

  /* (RC/FR/RC) : RetryCount/FailReason/RebootCause
  /* Pri : VersionPriority (MD-model,A-AP config)
 AP_ID  Model    Version(config/current)  Status(RC/FR/RC)    Pri  force
   1    WEA303i  Global/ 1.2.6.R          Success( 0/ 0/ 16)  MD   No
```

3.3 Problem Creating APs

To create an AP to the APC, the AP is configured using CLI/WEC.

Symptoms

When attempting to create AP executing ‘ap [ap config name]’, the AP is not added.

```
WEC8500# configure terminal
WEC8500/configure# ap ap_test123
[configApConfig] createApFromCfgName failed. (sApCfgName:ap_test123,
apId:-1, ret:-20)
```

Possible Causes

The APs has been already configured as many as the number of TotalApNo
TotalApNo is the same as MaxApNo, additional APs cannot be configured.
TotalApNo is the total number of APs that are configured additionally; and MaxApNo is the maximum number of APs that can be set up additionally.

The procedure to add APs using web UI is described below.

1) On the top menu, click Configuration.
2) On the left menu, click Access Points.
3) Click Add.
4) Click the Security tab.
5) Set AP Profile Name and MAC Address.
6) Click Apply to create an AP.

Solutions

1) Execute the ‘show apc summary’ command to check TotalApNo, which is set in the APC.

```
WEC8500# show apc summary

 ===== APC Summary =====
  ApcName               : APC_007e37001ff0
  AP Mgmt interface IP  : 100.100.100.1 (vlan1.100)
  MaxApNo               : 3000
  ActiveApNo            : 22
  TotalApNo             : 3000
  802.11a/n Radios      : 22/2978
  802.11b/g/n Radios    : 22/2978
  ActiveStationNo       : 0
  SecurityAuthType      : X.509
  RMacField             : Support
  DtlsPolicy            : Both
```

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2) Execute the ‘show ap summary config’ command to check the AP list, which is set in the APC, and delete the unused APs.

```
WEC8500# show ap summary config

 AP Mgnt interface IP : 100.100.100.1 (vlan1.100)

 AP_ID   Profile        AP_NAME         MAC_Address      IPv4Addr
State  Location
====== ========== ================= ================  ============
====== ==========
   1       ap_1     AP_201122337f20  20:11:22:33:7f:20    0.0.0.0
1/2/0
……

WEC8500# configure terminal
WEC8500/configure# ap ap_1
```

CHAPTER 4. Security Management

The APC provides security features such as RADIUS server interfacing, system user management, guest service, scanning and blocking unauthorized APs, firewall, and access control list (ACL) which are necessary in the wired and wireless network environment. This chapter describes the possible problems and their solutions while using various security features supported by the system.

4.1 Firewall does not Work

Access-group of the firewall is applied to the interface but the firewall does not work. This may occur if accelerator is not enabled for the firewall.

Symptoms

The firewall policy is set up on the interface but is not applied to the packets.

Possible Causes

Accelerator of the firewall is not enabled and therefore the firewall policy is not applied through the fast-forwarding path of the equipment.

```
WEC8500# show firewall status
Firewall Accelerator    : disable
Max Connections         : 327680
```

NOTE

The APC data processing uses the slow-forwarding path and the fast-forwarding path. If there is information concerning processing of the data, all data is processed through the fast-forwarding path. If the information does not exist, the data is processed through the slow-forwarding path. All information concerning firewall policy is in the slow-forwarding path.

Solutions

Check the accelerator setting (‘Firewall Accelerator’) of the firewall.

```
WEC8500# show firewall status
Firewall Accelerator    : enable
Max Connections         : 327680
```

If the setting is disabled, execute the following command to enable it.

```
WEC8500# configure terminal
WEC8500/configure# firewall accelerator
```

4.2 Cannot Detect Unauthorized APs

When an unauthorized AP is connected to the wireless network, it cannot be detected as a rogue AP.

Symptoms

Information of the specific unauthorized AP is missing in the rouge AP list displayed by the following command.

```
WEC8500# show wids rogue ap list malicious
WEC8500# show wids rogue ap list friendly
WEC8500# show wids rogue ap list unclassified
```

Possible Causes

The function for detecting unauthorized APs is not enabled.
The wireless channel used by the unauthorized AP is not included in the setting.

Solutions

1) Check if the function for detecting unauthorized APs is enabled.

```
WEC8500# show wids current-config
```

2) Check the operational state of RFSGW.
   - If rouge AP detection does not work when WIDS is enabled, check the RFSGW state.

3) Check the operational state of the AP monitor module.
   - If WIDS and RFSGW are normal but rogue APs cannot be detected, check message generation at the AP.

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CHAPTER 5. Wi-Fi Management

This chapter describes the problems which could occur concerning various settings for the wireless interface using Wi-Fi.

5.1 Problem with Radio Settings

Symptoms

Radio settings for 802.11a, 80211.bg, 802.11n, etc. cannot be configured on the AP.

Possible Causes

- The AP is not connected.
- CAPWAP state of the AP is not RUN (5)

Solutions

1) Execute the 'show ap summary' command to check that the AP is connected. If the AP is shown, setup the AP by referring to AP Settings.

```
WEC8500# show ap summary

AP Mgnt interface IP : 10.64.55.1 (vlan1.192)

AP_ID CFG_NAME    AP_NAME        MAC_Address       IPv4Addr    State
Location
===== ======== ============== ================= ============= =====
=========
   1    ap_1    AP_f4d9fb23d049 f4:d9:fb:23:d0:49 10.64.55.103  1/1/5
   2    ap_2    AP_f4d9fb23cfc9 f4:d9:fb:23:cf:c9 10.64.55.57   1/1/5
   3    ap_3    AP_f4d9fb23cbf9 f4:d9:fb:23:cb:f9 10.64.55.102  1/1/5
```

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2) Execute the ‘show ap summary’ command to check the CAPWAP state of the AP. If the CAPWAP state of the AP is not RUN (5), solve the problem by referring to CAPWAP Settings

```
WEC8500# show ap summary

AP Mgnt interface IP : 10.64.55.1 (vlan1.192)

AP_ID  CFG_NAME    AP_NAME        MAC_Address       IPv4Addr     State
Location
===== ======== ================ ================= ============   =====
===========
  1     ap_1    AP_f4d9fb23d049 f4:d9:fb:23:d0:49  10.64.55.103  1/1/5
  2     ap_2    AP_f4d9fb23cfc9 f4:d9:fb:23:cf:c9  10.64.55.57   1/1/5
  3     ap_3    AP_f4d9fb23cbf9 f4:d9:fb:23:cb:f9  10.64.55.102  1/1/5
```

5.2 Problem with Tx Power Settings

Symptoms

Power setting cannot be configured on the AP.

Possible Causes

- The AP is not connected.
- CAPWAP state of the AP is not RUN (5)
- Tx power setting range is different for each country, AP model, or channel.

Solutions

1) Execute the ‘show ap summary’ command to check that the AP is connected.

```
WEC8500# show ap summary

AP Mgnt interface IP : 10.64.55.1 (vlan1.192)

AP_ID  CFG_NAME      AP_NAME        MAC_Address       IPv4Addr     State
Location
====== ======== =============== ================= =============  =====
===========
  1      ap_1    AP_f4d9fb23d049 f4:d9:fb:23:d0:49  10.64.55.103   1/1/5
  2      ap_2    AP_f4d9fb23cfc9 f4:d9:fb:23:cf:c9  10.64.55.57    1/1/5
  3      ap_3    AP_f4d9fb23cbf9 f4:d9:fb:23:cb:f9  10.64.55.102   1/1/5
```

If the AP is shown, setup the AP by referring to AP Settings

2) Execute the ‘show ap summary’ command to check the CAPWAP state of the AP.

```
WEC8500# show ap summary

AP Mgnt interface IP : 10.64.55.1 (vlan1.192)

AP_ID  CFG_NAME      AP_NAME       MAC_Address       IPv4Addr     State
Location
====== ======== =============== ================= ============   =====
===========
  1      ap_1    AP_f4d9fb23d049 f4:d9:fb:23:d0:49  10.64.55.103   1/1/5
  2      ap_2    AP_f4d9fb23cfc9 f4:d9:fb:23:cf:c9  10.64.55.57    1/1/5
  3      ap_3    AP_f4d9fb23cbf9 f4:d9:fb:23:cb:f9  10.64.55.102   1/1/5
```

If the CAPWAP state of the AP is not RUN (5), solve the problem by referring to CAPWAP Settings

3) Since the APC setting range may be different depending on each country, AP model, or channel, it should be set according to the Tx power setting range below for each country.
Execute the 'show tx-power-range KR' (example) command to check the country, AP model, and the tx power setting range for each channel.

The following shows an example for Republic of Korea (KR).

```
WEC8500# show tx-power-range KR

 Country: Republic of Korea(KR)

+---------------[ 2.4Ghz ]---------------+--------------------[ 5Ghz ]--------------------+
|-no model-|-WEA302i-|-WEA303i-|-WEA303e-|--no model--|--WEA302i--|--WEA303i--|--WEA303e--|
|         |        |        |        |36~48|other |36~48|other|36~48|other|36~48|other|
+----------+---------+---------+---------+-----+------+-----+-----+-----+-----+-----+-----+
| 6~20     | 3~20    | 6~23    | 6~23    | 6~17|  6~20| 3~17| 3~20| 6~17| 6~23| 6~17| 6~23|
```

The following shows an example for United Kingdom (GB). Italy (IT), Australia (AU), Russia (RU), South Africa (ZA), UAE (AE), India (IN), and Turkey (TR) also use the same range as United Kingdom.

```
WEC8500# show tx-power-range GB

 Country: United Kingdom(GB)

+---------------[ 2.4Ghz ]---------------+--------------------[ 5Ghz ]--------------------+
|-no model-|-WEA302i-|-WEA303i-|-WEA303e-|--no model--|--WEA302i--|--WEA303i--|--WEA303e--|
|         |        |        |        |36~48|other |36~48|other|36~48|other|36~48|other|
+----------+---------+---------+---------+-----+------+-----+-----+-----+-----+-----+-----+
| 6~20     | 3~20    | 6~20    | 6~20    | 6~20|  6~20| 3~20| 3~20| 6~20| 6~23| 6~20| 6~23|
+-------------------------------------------------------------------------------------------+
```

The following shows an example of United States (US). Peru (PE) and Chile (CL) use the same range as that of United States.

```
WEC8500# show tx-power-range US

 Country: United States(US)

+---------------[ 2.4Ghz ]---------------+--------------------[ 5Ghz ]--------------------+
|-no model-|-WEA302i-|-WEA303i-|-WEA303e-|--no model--|--WEA302i--|--WEA303i--|--WEA303e--|
|         |        |        |        |36~48|other |36~48|other|36~48|other|36~48|other|
+----------+---------+---------+---------+-----+------+-----+-----+-----+-----+-----+-----+
| 6~20     | 3~20    | 6~20    | 6~20    | 6~17|  6~20| 3~17| 3~20| 6~17| 6~23| 6~17| 6~23|
+-------------------------------------------------------------------------------------------+
```

5.3 RRM does not Work

Symptoms

The RRM (Radio Resource Management) functions, such as DPC (Dynamic Power Control), DCS (Dynamic Channel Selection), and CHDC (Coverage Hole Detection & Correction) do not work.

Possible Causes

- The AP is not connected or CAPWAP state of the AP is not RUN (5).
- The functions are not enabled.

Solutions

1) Check the AP state first by referring to Section 'Problem with Radio Settings'

2) Execute the 'show rrm config-summary' command to check the function settings. DPC Enable, DCS Enable, and CHDC Enable must be 'Enabled'.

```
WEC8500# show rrm config-summary

RRM Status  .....  Enabled
  Rf Group Name ...
                                        80211a/n       80211b/g/n
  Dynamic Power Control ------------------------ ------------------
   DPC Enable                        ..  Enabled          Enabled
   Periodic Interval                 ..      600              600
   RSSI Threshold                    ..      -70              -70
   TX Power Min. - Max.              ..  16 - 20       12    - 20
   Minimum Number of AP              ..        4                4
   Elapsed Time After Last Run       ..      321              317
  Dynamic Channel Selection -------------------- ------------------
   DCS Eanble                        ..  Enabled          Enabled
   Periodic Interval                 ..      120              120
   Anchor Time Start                 ..        4                4
   Anchor Time Stop                  ..        5                5
   Interference Level Threshold      ..       80               80
   Channel Utilization Threshold     ..       80               80
   My Utilization Threshold          ..       10               40
   Delayed Channel Change            .. Disabled         Disabled
   Aware-Option: Voice Call          ..  Enabled          Enabled
   Aware-Option: Traffic             .. Disabled         Disabled
   Aware-Option: Station Assoc.      .. Disabled         Disabled
   Station Count for Station Aware   ..        0                0
   Elapsed Time After Last Run       ..       35              115
  Coverage Hole Detection and Control --------- ------------------
   CHDC Enable                       ..  Enabled          Enabled
   RSSI Voice Threshold              ..      -75              -75
   RSSI  Data Threshold              ..      -80               80
```

```
    Minimum Failed Client Count       ..        5               5
    Percentage Min. Failed Count      ..       25              25
    Statistics Collect Enable         .. Disabled        Disabled
    Statistics Collect Interval       ..      120             120
```

3) To enable all RRM functions, execute the following commands.

```
WEC8500# configure terminal
WEC8500/configure# rrm
WEC8500/configure/rrm# enable
WEC8500/configure/rrm# 80211a dpc  enable
WEC8500/configure/rrm# 80211a dcs  enable
WEC8500/configure/rrm# 80211a chdc enable
WEC8500/configure/rrm# 80211b dpc  enable
WEC8500/configure/rrm# 80211b dcs  enable
WEC8500/configure/rrm# 80211b chdc enable
```

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5.4 Location Tracking does not Work

Symptoms

The Location Tracking function does not work

Possible Causes

Location Tracking is disable (0).

Solutions

Execute the ‘show locationtrack config’ command to check the Location Tracking setting information.

```
WEC8500# show locationtrack config
Location tracking enable....: Enabled
Algorithm type..............: 4
Expiry date of history files: 0
```

If Location Tracking is disable (0), execute the following command.

Step	Command	Description
1	WEC8500# configure terminal	Go to configure mode.
2	WEC8500/configure# locationtrack	Go to locationtrack mode.
3	WEC8500/configure/locationtrack # enable	Enable locationtrack.
4	WEC8500/configure/locationtrack # station [mac address]	Setup MAC address of a station to track

ANNEX A. Problem Analysis Log List

The logs managed by the APC contain important information which helps problem analysis. This appendix provides a summary of meanings, locations, and methods of extraction for the logs helpful for problem analysis of the system.

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A.1 crash log

Item	Storage Location	File Type	Description	Extraction Method
reboot history	log/crash	Stores all reboot history including system reboots from critical crash as well as normal reboots in the operational process.	**[WEC]** cdr_dump.txt **[CLI]** cdr-NNN-XXX-hh_mm_ss_MM-DD-YYYY.txt	**[WEC]** Administration > Tech Support > APC Reboot History > Download **[CLI]** WEC8500# show debug reboot export WEC8500# file upload ID PW IPADDR disk:/log/crash/cdr-….txt cdr-….txt WEC8500# file remove disk:/log/crash/cdr-….txt
core dump	log/crash	When an application process is terminated for an abnormal cause, a dump file containing the memory context information and the tty log information is created.	**[WEC]** core_apc_tarball.tar **[CLI]** core-XXX-NN-TIME-PID.tar.gz	**[WEC]** Administration > Tech Support > APC Coredump > Download **[CLI]** WEC8500# show debug coredump summary WEC8500# file upload ID PW IPADDR disk:/log/crash/core-….tar.gz core-….tar.gz
SE crash core dump	log/se/crash	Create a core register dump file when any SE crash occurs.	**[WEC]** se_crash_<time_stamp>	**[WEC]** Administration > Tech Support > APC-Local PC > Select the file storage location in the navigation panel, press the file download button **[CLI]** WEC8500# file upload ID PW IPADDR disk:/log/se/crash/se_crash_2013-1-4_17_0_22 se_crash_2013-1-4_17_0_22

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A.2 trace log

Item	Storage Location	File Type	Description	Extraction Method
syslog	log/debug/os	syslog syslog.N.gz	Important operation record information of system blocks logged by the system logger function.	**[WEC]** Administration > File Management > APC-Local PC > Select a file in the storage location in the browse window and click the Download button **[CLI]** WEC8500# file upload *ID PW IPADDR* disk:/log/debug/os/messages messages WEC8500# file upload ID PW IPADDR disk:/log/debug/os/kern.log kern.log
alarm/event log	log	system.txt	Log of alarms and events generated in the system.	**[Common]** WEC8500# configure terminal WEC8500/configure# alarm dump current **[WEC]** Administration > File Management > APC-Local PC > Select a file in the storage location in the browse window and click the Download button. After download completes, click the Delete button to delete the extracted file **[CLI]** WEC8500# file upload ID PW IPADDR disk:/log/system.txt system.txt WEC8500# file remove disk:/log/system.txt
software manager log	log	swm.log	Trace log recorded by the monitoring software which manages the application software blocks of the system.	**[WEC]** Administration > File Management > APC-Local PC > Select a file in the storage location in the browse window and click the Download **[CLI]** WEC8500# file upload ID PW IPADDR disk:/log/swm.log

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Item	Storage Location	File Type	Description	Extraction Method
				swm.log
process log	log	processes.log processes.detail	Log of signal reception and process termination history for software blocks of the system's application	**[WEC]** Administration > File Management > APC-Local PC > Select a file in the storage location in the browse window and click the Download **[CLI]** WEC8500# file upload ID PW IPADDR disk:/log/ processes.log processes.log

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A.3 debug log

Item	Storage Location	File Type	Description	Extraction Method
appl. debug log	log	Debug.log Debug.log.*N*.gz	Realtime debug log of information useful for future tracking recorded by various software blocks of the system.	**[WEC]** Administration > File Management > APC-Local PC > Select a file in the storage location in the browse window and click the Download button. **[CLI]** WEC8500# file upload *ID PW IPADDR* disk:/log/Debug.log Debug.log WEC8500# file upload *ID PW IPADDR* disk:/log/Debug.log.old Debug.log.old WEC8500# file upload *ID PW IPADDR* disk:/log/Debug.log.old2 Debug.log.old2
CPU over-load dump	log	cpuload cpuload.old.N	Log of important system information while the CPU load alarm remains active due to system overload.	**[Common]** Method valid only when the file exists in the storage location. **[WEC]** Administration > File Management > APC-Local PC > Select a file in the storage location in the browse window and click the Download button. **[CLI]** WEC8500# file upload *ID PW IPADDR* disk:/log/cpuload cpuload
NFM debug logs	log/se	nfm.logN	SE memory information recorded when a simple executive (SE) crash occurs on the data processing layer or there	**[WEC]** Administration > File Management > APC-Local PC >Select the file storage location in the navigation panel, press the file download button **[CLI]**

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Item	Storage Location	File Type	Description	Extraction Method
			is a problem with data processing	WEC8500# file upload ID PW IPADDR disk:/log/se/nfm.log1 nfm.log1
Command/Login-Out logs	log/uilog log/web	message.logN wec.loginout.log	Records the commands entered by the operator on the CLI Contains CLI/web login/logout information	**[CLI]** WEC8500# show command-log **[WEC]** Web login information Administration>Logs>Login-Out **[CLI]** CLI login information WEC8500# show event group system

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ABBREVIATION

A

ACL	Access Control List
AP	Access Point
APC	Access Point Controller

B

BSSID	Basic Service Set Identifier

C

CAPWAP	Control and Provisioning Wireless Access Point
CHDC	Coverage Hole Detection & Correction
CPU	Central Processing Unit

D

DPC	Dynamic Power Control
DCS	Dynamic Channel Selection
DTLS	Datagram Transmission Layer Security

F

FTP	File Transfer Protocol

I

I2C	Inter-Integrated Circuit
IP	Internet Protocol
I/O	Input/Output

M

MIB	Management Information Base

P

PSK	Pre-Shared Key

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R

RADIUS	Remote Authentication Dial-In User Service
RRM	Radio Resource Management

S

SE	Simple Executive
SNMP	Simple Network Management Protocol
SSD	Solid State Disk
SSID	Service Set Identifier
S/W	Software

T

TS	Technical Support

U

UI	User Interface

W

WE	Wireless Enterprise
WEC	Wireless Enterprise Control
Wi-Fi	Wireless Fidelity
WLAN	Wireless Local Area Network

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WEC8500/WEC8050 (APC)

Maintenance Manual

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